PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: SANGHOON LEE CHRISTINE I. PODILCHUK	Conf. No. 7445 Examiner: J. Brier
Serial No.: 09/823,793	Group Art Unit: 2672
Filed: March 30, 2001	Att'y Docket: 2100.004900
For: FOVEATION-BASED ERROR RESILIENCE ALGORHITHM	Customer No. 46290

APPEAL BRIEF

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby submit this Appeal Brief to the Board of Patent Appeals and Interferences in response to the final Office Action dated April 6, 2007. A Notice of Appeal was filed on June 27, 2007 and so this Appeal Brief is timely filed.

The Commissioner is authorized to deduct the fee for filing this Appeal Brief ($500) from **Williams, Morgan & Amerson's P.C. Deposit Account 50-0786/2100.004900.**

I. REAL PARTY IN INTEREST

The present application is owned by Lucent Technologies, Inc. The assignment of the present application to Lucent Technologies, Inc., is recorded at Reel 011684, Frame 0388.

II. RELATED APPEALS AND INTERFERENCES

Applicants are not aware of any related appeals and/or interferences that might affect the outcome of this proceeding.

III. STATUS OF THE CLAIMS

Claims 20-25, 31-34, 36, 38, and 40-46 are pending in the application and are the subject of the present appeal. Claims 20-25, 31-34, 36, 38, 45, and 46 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Claims 20-25, 31-34, 36, 38, 45, and 46 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Heinzelman, et al (U.S. Patent No. 6,754,277). Claims 40-44 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Heinzelman in view of Applicants' Admitted Prior Art.

IV. STATUS OF AMENDMENTS

There were no amendments after the final rejections.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The human eye is foveated so that the image resolution decreases exponentially away from the focal point of the human eye. Consequently, the human eye can only perceive fine

details in the area of focus (conventionally referred to as the foveation area) proximate the foveation point. Video data compression techniques can utilize the non-uniform resolution processing of the human eye caused by foveation to separate high frequency data components from areas of lesser importance without causing a corresponding loss of visual quality in the image perceived by a user. These high frequency elimination techniques may reduce the quantity of data needed to transmit a video image of a selected quality. See Patent Application, page 2, ll. 1-10. However, conventional foveation-based video data compression techniques suffer from a significant disadvantage because they do not correct for the high bit error rate typically expected in wireless communication. Although the high data error rates negatively impact both the foveation area and the background area, the absence of error correction for the foveation area leads to a significant perceptual degradation in the received video image. See Patent Application, page 3, ll. 5-10.

To address these disadvantages in conventional foveation-based video data compression techniques, independent claims 20, 40, and 45 set forth methods for partitioning a video image between a foveated area and a background area. Embodiments of the methods include defining a foveation point in the video image, defining a foveated area in proximity to said foveation point. The methods also include extracting the first plurality of data signals from said video image representing said foveated area and extracting a second plurality of data signals from said video image representing a background area. In one embodiment, the foveated area may be defined using a local or remote pointing device that may be used to control the direction of a video camera. For example, foveation points and foveation areas may be defined using a video camera, an eye-tracking device, a computer mouse, and/or a joystick. Alternatively, a foveated area can be automatically determined through the use of the foveation filters or screen pattern

filters. See Patent Application, page 5, ll. 15-22. An image can then be partitioned into a foveated layer and a background layer by applying a threshold for local bandwidth to macro blocks of the video image. See Patent Application, page 6, ll. 1-11 and Figure 1.

The extracted first plurality of data signals are encoded with a first error correction protocol to create a first encoded signal and the extracted second plurality of data signals are encoded with a second error correction protocol different from the first error correction protocol to create a second encoded signal. In claim 20, the first error correction protocol comprises a first FEC algorithm and the second error correction protocol comprises a second FEC algorithm. The first FEC algorithm is more powerful than the second FEC algorithm. In claim 40, the first error correction protocol is a first ARQ communications protocol having a first allowable error threshold associated therewith and the second error correction protocol is a second ARQ communications protocol having a second allowable error threshold associated therewith. The first allowable error threshold is lower than the second allowable error threshold. See Patent Application, page 8, line 14-page 9, line 8.

Independent claims 25 and 45 set forth methods for the processing of video image data received from a first electronic device. In one embodiment, the video image data has been encoded in accordance with the techniques set forth in claim 20. Claim 25 sets forth decoding the first transmitted encoded signal and correcting errors within the first transmitted encoded signal with the use of a high-priority processing step to create a received foveated area. Claim 25 also sets forth decoding the second transmitted encoded signal and correcting errors within the second transmitted encoded signal with use of a low priority processing step to create a received a background area. Claim 46 sets forth decoding a first signal indicative of at least one foveation area around a foveation point in a video image and correcting errors within the first

signal using a high-priority processing step to create a received foveated area. Claim 46 also sets forth decoding a second signal indicative of a background area in the video image and correcting errors within the second signal using a low priority processing step to create a received background area. See Patent Application, page 9, ll. 9-16.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants respectfully request that the Board review and overturn the three rejections present in this case. The following issues are presented on appeal in this case:

(A) Whether claims 20-25, 31-34, 36, 38, 45, and 46 comply with the written description requirement;

(B) Whether claims 20-25, 31-34, 36, 38, 45, and 46 are anticipated by Heinzelman; and

(C) Whether claims 40-44 are obvious over Heinzelman in view of Applicants' Admitted Prior Art.

VII. ARGUMENT

A. Legal Standards

The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. *In re Edwards*, 558 [568] F.2d 1349, 196 USPQ 465 (CCPA 1978); *In re Herschler*, 591 F.2d 693, 200 USPQ 711 (CCPA 1979); *In re Kaslow*, 707 F.2d 1366, 217 USPQ 1089 (Fed. Cir. 1983). The content of the

drawings may also be considered in determining compliance with the written description requirement. *In re Barker*, 559 F.2d 588, 194 USPQ 470 (CCPA 1977); *In re Kaslow*, 707 F.2d 1366, 217 USPQ 1089 (Fed. Cir. 1983).

An anticipating reference by definition must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). Inherency in anticipation requires that the asserted proposition *necessarily* flow from the disclosure. *In re Oelrich*, 212 U.S.P.Q. (BNA) 323, 326 (C.C.P.A. 1981); *Levy*, 17 U.S.P.Q.2d (BNA) at 1463-64; *Skinner*, at 1789; *In re King*, 231 U.S.P.Q. (BNA) 136, 138 (Fed. Cir. 1986). It is not enough that a reference could have, should have, or would have been used as the claimed invention. "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Oelrich*, at 326, quoting *Hansgirg v. Kemmer*, 40 U.S.P.Q. (BNA) 665, 667 (C.C.P.A. 1939); *In re Rijckaert*, 28 U.S.P.Q.2d (BNA) 1955, 1957 (Fed. Cir. 1993), quoting *Oelrich*, at 326; *see also Skinner*, at 1789.

A finding of obviousness under 35 U.S.C. § 103 requires a determination of the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed subject matter and the prior art, and whether the differences are such that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. *Graham v. John Deere Co.*, 148 USPQ 459 (U.S. S.Ct. 1966).

To determine whether the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made, one should determine whether the prior art reference (or references when combined) teach or suggest all the claim limitations. Furthermore, it is necessary for the Examiner to identify the reason why a person of ordinary skill in the art would have combined the prior art references in the manner set forth in the claims.

The required reason may be provided by some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Thus, the absence of a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings may be evidence that the claims are not obvious. Moreover, there should be a reasonable expectation of success on the part of a person of ordinary skill in the art. Teaching away by the prior art may constitute *prima facie* evidence that the claimed invention is not obvious.

B. Claims 20-25, 31-34, 36, 38, 45, and 46 comply with the written description requirement.

As stated above, the test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the person of ordinary skill in the art that the inventor had possession at that time of the later claimed subject matter.

In the Final Office Action, the Examiner admits that the specification describes defining a foveation area but alleges that the specification does not describe determining the focal point of the eye. The Examiner further alleges that this type of process requires processes different than the processes described in the specification. Applicants respectfully disagree and note that the techniques described in the specification are well known techniques for defining foveation points and foveation areas in images based on the focal point of an eye. For example, foveation points and foveation areas can be obtained via a local or remote pointing device that acts to control the direction of a video camera. Exemplary pointing devices can include eye-tracking devices, a

computer mouse, a joystick, a retina tracker, or a camera under manual or computer keyboard control. Alternatively, a foveated area can be automatically determined using foveation filters or screen pattern filters. See Patent Application, page 5, ll. 14-22. Applicants also submit that Lee, et al ("Unequal Error Protection for Foveation-Based Error Resilience over Mobile Networks," IEEE 2000) also describes defining foveation points and foveated areas based upon the focal point of an eye. Furthermore, the Examiner has provided no evidence in support of his allegation that the techniques described in the specification cannot be used to determine foveation points and/or foveated areas based on the focal point of an eye. Thus, Applicants respectfully submit that the specification reasonably conveys to the artisan numerous techniques for defining a foveation point in a video image based on a focal point of an eye.

For at least the aforementioned reasons, Applicants respectfully submit that the disclosure of the application as originally filed reasonably conveys to the person of ordinary skill in the art that the inventor had possession at that time of the subject matter in the pending claims. Applicants therefore respectfully submit that the pending claims comply with the written description requirement and requests that the Examiner's rejections of claims 20-25, 31-34, 36, 38, 45, and 46 under 35 U.S.C. § 112, first paragraph, be REVERSED.

C. Claims 20-25, 31-34, 36, 38, 45, and 46 are not anticipated by Heinzelman.

As discussed above, the visual field produced by a human eye is foveated, *i.e.* the resolution of images in the visual field exponentially decreases away from the focal point of the eye. The point in the visual field corresponding to the focal point of the eye is often referred to as the foveation point. The amount of data required to represent images in the video field may be reduced by removing high frequency data components from areas of the lesser importance in

the visual field, *i.e.* background areas outside a foveation area that is proximate the foveation point. See Patent Application, page 2, ll. 1-10. However, the lack of error correction may disproportionately degrade the perceived visual quality of the foveated area relative to the background area.

Thus, independent claims 20, 25, and 45 set forth, among other things, defining at least one foveation point in a video image and defining at least one foveated area in proximity to the foveation point. For example, the foveated area may be defined using a local or remote pointing device that may be used to control the direction of a video camera. See Patent Application, page 5, ll. 15-17. Applicants also describe and claim extracting a first plurality of data signals from a video image representing the foveated area and extracting a second plurality of data signals from the video image representing a background area. Applicants further claim encoding the extracted first plurality of data signals with a first error correction protocol to create a first encoded signal and encoding the extracted second plurality of data signals with a second error correction protocol different from the first error correction protocol.

Claim 46 sets forth decoding a first signal indicative of at least one foveation area around a foveation point in a video image, wherein the first signal is encoded according to a first error correction protocol. Claim 46 also sets forth correcting errors within the first signal using a high-priority processing step to create a received foveated area and decoding a second signal indicative of a background area in the video image, wherein the second signal is encoded according to a second error correction protocol different from the first error correction protocol. Claim 46 further claims correcting errors within the second signal using a low priority processing step to create a received background area.

Heinzelman describes partitioning a video image into motion data and texture data and then providing error protection for the motion data that is greater than the error protection that is provided for the texture data. In the Final Office Action, the Examiner alleges that Heinzelman describes determining a foveation area because the present patent application states that a foveation area may correspond to a moving portion of the image. However, Applicants respectfully submit that Heinzelman does not explicitly determine a foveation point or a foveation area. The Examiner apparently agrees with this conclusion and has not alleged that Heinzelman explicitly describes determining a foveation point or a foveation area. Applicants therefore submit that the Examiner is alleging that Heinzelman inherently describes determining a foveation area because Heinzelman describes partitioning a video image into motion data and texture data. Applicants respectfully disagree and submit that Heinzelman does not inherently describe determining a foveation area.

As stated above, inherency in anticipation requires that the asserted proposition *necessarily* flow from the disclosure. It is not enough that a reference could have, should have, or would have been used as the claimed invention. In the present case, Applicants respectfully submit that simply using motion to select portions of the image does not *necessarily* imply that the selected portion of the image is a foveation area.

As discussed in the previous response, foveation points are defined to be the points of highest visual importance as perceived by the human eye. Foveation areas are areas around the foveation points that are perceived by the human eye with the highest sensitivity. Accordingly, foveation points and the associated foveation areas are determined by the physiology of the human eye and the sensory operations in the human brain. Foveation points and the associated foveation areas are not *necessarily* associated with any particular characteristic of an image. In

particular, a moving portion of the image *may not necessarily* correspond to a foveation point and/or a foveation area. For example, a stationary object seen against a moving background may correspond to a foveation point and/or a foveation area. Applicants therefore submit that partitioning a video image into motion data and texture data does not *necessarily* correspond to selecting a foveation area from the video image. Consequently, the techniques described in Heinzelman function very differently from the claimed techniques. For example, if the foveation area corresponds to a stationary object seen against a moving background, the technique described by Heinzelman would select the moving background apply the increased error protection to the moving background, whereas the techniques set forth in the pending claims would select the stationary object and apply the increased error protection to the stationary object.

Applicants therefore respectfully submit that Hinzelman does not describe or suggest, either explicitly or inherently, defining at least one foveation point in a video image. Heinzelman also fails to teach or suggest, either explicitly or inherently, defining at least one foveated area in proximity to the foveation point. Accordingly, Heinzelman fails to teach or suggest, either explicitly or inherently, providing different encoding schemes for data signals corresponding to a foveated area and a background area.

For at least the aforementioned reasons, Applicants respectfully submit that the present invention is not anticipated by Heinzelman and request that the Examiner's rejections of claims 20-25, 31-34, 36, 38, 45, and 46 under 35 U.S.C. 102(e) be REVERSED.

D. Claims 40-44 are not obvious over Heinzelman in view of Applicants' Admitted Prior Art.

Independent claim 40 sets forth, among other things, defining at least one foveation point in a video image and defining at least one foveated area in proximity to the foveation point. The method also includes extracting the first plurality of data signals from said video image representing said foveated area and extracting a second plurality of data signals from said video image representing a background area. The extracted first plurality of data signals are encoded with a first error correction protocol to create a first encoded signal and the extracted second plurality of data signals are encoded with a second error correction protocol different from the first error correction protocol to create a second encoded signal. The first error correction protocol is a first ARQ communications protocol having a first allowable error threshold associated therewith and the second error correction protocol is a second ARQ communications protocol having a second allowable error threshold associated therewith. The first allowable error threshold is lower than the second allowable error threshold.

As discussed above, Heinzelman fails to teach or suggest (explicitly or inherently) defining at least one foveation point in a video image. Heinzelman also fails to teach or suggest defining at least one foveated area in proximity to the foveation point. Accordingly, Heinzelman fails to teach or suggest providing different encoding schemes for data signals corresponding to a foveated area and a background area. The Examiner also admits that Heinzelman fails to describe or suggest using an ARQ error correction protocol. The Examiner therefore argues that it would be obvious to combine the ARQ error correction protocol described in the background section of the present application with the subject matter described by Heinzelman to arrive at the subject matter set forth in claims 40-44. However, Applicants respectfully submit that the

background section of the present application fails to remedy the fundamental deficiencies of Heinzelman. In particular, the background section of the present application does not describe or suggest applying different encoding schemes to data signals corresponding to a foveated area and a background area.

The prior art of record also fails to provide any suggestion or motivation for modifying the prior art to arrive at Applicants claimed invention. To the contrary, Heinzelman teaches away from Applicants' claimed invention. In particular, Heinzelman teaches that motion information in a video image has a relatively high level of importance because motion-compensation cannot be performed without the motion information. See Heinzelman, col. 2, ll. 46-49. Thus, Heinzelman teaches that video images should be partitioned into motion data and texture data, regardless of whether or not the motion data and/or the texture data are proximate to a foveation point. Thus, Applicants respectfully submit that Heinzelman teaches away from defining at least one foveation point in a video image and defining at least one foveated area in proximity to the foveation point. For example, if the foveation area corresponds to a stationary object seen against a moving background, the technique described by Heinzelman would select the moving background and apply the increased error protection to the moving background, whereas the techniques set forth in the pending claims would select the stationary object and apply the increased error protection to the stationary object. It is by now well established that teaching away by the prior art may constitute *prima facie* evidence that the claimed invention is not obvious.

For at least the aforementioned reasons, Applicants respectfully submit that the present invention is not obvious over Heinzelman and the Admitted Prior Art, either alone or in

combination. Applicants respectfully request that the Examiner's rejections of claims 40-44 under 35 U.S.C. 103(a) be REVERSED.

VIII. CLAIMS APPENDIX

The claims that are the subject of the present appeal – claims 20-25, 31-34, 36, 38, and 40-46 – are set forth in the attached "Claims Appendix."

IX. EVIDENCE APPENDIX

There is no separate Evidence Appendix for this appeal.

X. RELATED PROCEEDINGS APPENDIX

There is no Related Proceedings Appendix for this appeal.

XI. CONCLUSION

In view of the foregoing, it is respectfully submitted that the Examiner erred in not allowing all claims pending in the present application, claims 20-25, 31-34, 36, 38, and 40-46, over the prior art of record. The undersigned may be contacted at (713) 934-4052 with respect to any questions, comments or suggestions relating to this appeal.

Respectfully submitted,

Date: August 27, 2007

/Mark W. Sincell/
Mark W. Sincell, Ph.D.
Reg. No. 52,226
WILLIAMS, MORGAN & AMERSON
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-7000
(713) 934-7011 (facsimile)

AGENT FOR APPLICANTS

CLAIMS APPENDIX

1-19. (Canceled)

20. (Previously Presented) A method for partitioning a video image between a foveated area and a background area comprising the steps of:

defining a foveation point in the video image;

defining a foveated area in proximity to said foveation point;

extracting the first plurality of data signals from said video image representing said foveated area;

extracting a second plurality of data signals from said video image representing a background area;

encoding the extracted first plurality of data signals with a first error correction protocol to create a first encoded signal; and

encoding the extracted second plurality of data signals with a second error correction protocol different from the first error correction protocol to create a second encoded signal, wherein the first error correction protocol comprises a first FEC algorithm and a second error correction protocol comprises a second FEC algorithm, the first FEC algorithm being more powerful than the second FEC algorithm.

21. (Previously Amended) The method according to claim 20, wherein the step of defining said foveation point comprises the step of:

pointing a video device at a location of the image using a means for pointing.

22. (Previously Presented) The method according to claim 21, wherein the pointing means comprises at least one of: a computer keyboard; a computer mouse; a joystick, and an eye tracking device.

23. (Previously Presented) The method according to claim 20 further comprising the step of:

calculating a local bandwidth threshold based on said foveation point; and

wherein the step of defining said foveation area comprises the steps of:

calculating a local bandwidth for each pixel group in said video image; and

incorporating those pixel groups having a respective local bandwidth above said local bandwidth threshold into said foveation area.

24. (Previously Presented) The method according to claim 20 further comprising the steps of:

packetizing the first encoded signal with inserted synchronization markers occurring after a first predetermined number of bits; and

packetizing the second encoded signal with the inserted synchronization markers occurring after a second predetermined number of bits wherein the first number is smaller than the second number.

25. (Previously Presented) A method for the processing of video image data received from a first electronic device, the first electronic device having performed the steps of:

defining a foveation point in a video image;

defining at least one foveated area around said foveation point;

extracting a first plurality of data signals representing said foveated area;

extracting a second plurality of data signals representing a background area;

encoding the extracted first plurality of data signals with a first error correction protocol to create a first encoded signal; and

encoding the extracted second plurality of data signals with a second error correction protocol different from the first error correction protocol to create a second encoded signal, the method comprising the steps of:

decoding the first transmitted encoded signal;

correcting errors within the first transmitted encoded signal with the use of a high-priority processing step to create a received foveated area;

decoding the second transmitted encoded signal; and

correcting errors within the second transmitted encoded signal with use of a low priority processing step to create a received a background area.

26-30. (Canceled)

31. (Previously Presented) The method according to claim 20 wherein the first plurality of data signals comprises all pixel signals included in a high-resolution area of said video image.

32. (Previously Presented) The method according to claim 20 wherein the first plurality of data signals comprises all pixel signals that are included in a high motion area of said video image.

33. (Previously Presented) The method according to claim 20 wherein the first error correction protocol conforms to video communications industry standards H263++ and/or MPEG-4.

34. (Previously Presented) The method according to claim 20 wherein the second error correction protocol conforms to video communications industry standards H263++ and/or MPEG-4.

35. (Canceled)

36. (Previously Presented) The method according to claim 20 further comprising the steps of:

transmitting the first encoded signal; and

transmitting a second encoded signal at a predetermined time after the transmitting of said first encoded signal.

37. (Canceled)

38. (Previously Presented) The method according to claim 25 further comprising the step of:

combining the received foveated area and the received background area to create the video image data.

39. (Canceled)

40. (Previously Presented) A method for partitioning a video image between a foveated area and a background area comprising the steps of:

defining a foveation point in the video image;

defining a foveated area in proximity to said foveation point;

extracting a first plurality of data signals from said video image representing said foveated area;

extracting a second plurality of data signals from said video image representing a background area;

encoding the extracted first plurality of data signals with a first error correction protocol to create a first encoded signal; and

encoding the extracted second plurality of data signals with a second error correction protocol different from the first error correction protocol to create a second encoded signal wherein the first error correction protocol comprises a first ARQ communications protocol having a first allowable error threshold associated therewith and the second error correction protocol comprises a second ARQ communications protocol having a second allowable error

threshold associated therewith, the first allowable error threshold being lower than the second allowable error threshold.

41. (Previously Presented) The method according to claim 40 wherein the step of defining said foveation point comprises the step of pointing a video device at a location of the image using a means for pointing.

42. (Previously Presented) The method according to claim 41 wherein the pointing means comprises at least one of: a computer keyboard; a computer mouse; a joystick, and an eye tracking device.

43. (Previously Presented) The method according to claim 40 further comprising the step of:

calculating a local bandwidth threshold based on said foveation point; and

wherein the step of defining said foveation area comprises the steps of:

calculating a local bandwidth for each pixel group in said video image; and

incorporating those pixel groups having a respective local bandwidth above said local bandwidth threshold into said foveation area.

44. (Previously Presented) The method according to claim 40 further comprising the steps of:

packetizing the first encoded signal with inserted synchronization markers occurring after a first predetermined number of bits; and

packetizing the second encoded signal with the inserted synchronization markers occurring after a second predetermined number of bits wherein the first number is smaller than the second number.

45. (Previously Presented) a method, comprising:

defining a foveation point in a video image;

defining a foveated area in proximity to the foveation point;

extracting a first plurality of data signals indicative of the foveated area from the video image;

extracting a second plurality of data signals indicative of a background area from the video image;

encoding the extracted first plurality of data signals with a first error correction protocol to create a first encoded signal; and

encoding the extracted second plurality of data signals with a second error correction protocol different from the first error correction protocol to create a second encoded signal.

46. (Previously Presented) A method comprising:

decoding a first signal indicative of at least one foveation area around a foveation point in a video image, wherein the first signal is encoded according to a first error correction protocol;

correcting errors within the first signal using a high-priority processing step to create a received foveated area;

decoding a second signal indicative of a background area in the video image, wherein the second signal is encoded according to a second error correction protocol different from the first error correction protocol; and

correcting errors within the second signal using a low priority processing step to create a received background area.